AMENDMENTS TO THE CLAIMS

Claims 1-7 (Canceled)

8. (Previously Presented) A method of producing an implant selected from the group consisting of an open-pored coated implant, and a joint replacement implant, comprising:

applying at least one layer of a biocompatible metal or an alloy thereof to a virgin surface of the implant to produce an implant surface comprising an open-pored structure with a porosity in a range of between about 20% and 85%; and

producing a surface micro-structure on the open-pored structure by a vacuum plasma spraying method.

9. (Previously presented) The method according to claim 8, wherein the biocompatible metal is applied by means of a vacuum plasma spraying method.

10. (Previously presented) The method according to claim 8, wherein the biocompatible metal is applied by a technique selected from the group consisting of brushing, spreading, spraying, and a like application technique.

11. (Previously presented) The method according to claim 8 wherein the at least one layer applied to the virgin surface of the implant is sintered.

12. (Previously Presented) The method according to claim 11, wherein the at least one layer comprises a material selected from the group consisting of binders, sintering adjuvants, and binders and sintering adjuvants.

13. (Previously Presented) The method according to claim 12, wherein the sintering adjuvant comprises a sintering adjuvant metal which, together with the biocompatible metal or alloy thereof, forms a eutectic selected from the group consisting of low-melting eutectic, silicon, cobalt, and a eutectic in elemental powder form.

14. (Previously presented) The method according to claim 11 wherein sintering is carried out *in vacuo*.

15. (Previously presented) The method according to claim 11 wherein sintering comprises a phase selected from the group consisting of a debindering phase, a dehydrogenation phase, and a debindering and dehydrogenation phase.

16. (Previously presented) The method according to 11 wherein a sintering temperature in a range selected from the group consisting of the range from 800°C to 1500°C inclusive, the range from 950°C to 1400°C inclusive, and the range from 1000°C to 1350°C inclusive is used.

17. (Previously presented) The method according to claim 8 wherein the biocompatible metal is used in a form selected from the group consisting of powder form and an angular powder.

18. (Previously presented) The method according to claim 8 wherein a layer thickness of the open-pored surface layer in a range selected from the group consisting of the range from 0.1 mm to 2.5 mm inclusive, the range from 0.3 mm to 1.9 mm inclusive, and the range from 0.5 mm to 1.5 mm is produced.

19. (Previously presented) The method according to claim 8 wherein the biocompatible metal applied to the virgin surface of the implant has a particle size in a range selected from the group consisting of the range from 50 μm to 800 μm inclusive, the range from 100 μm to 650 μm inclusive, and the range from 200 μm to 550 μm inclusive.

20. (Previously presented) The method according to claim 8 wherein the biocompatible metal is selected from the group consisting of titanium, zirconium, niobium, and tantalum.

21. (Previously presented) The method according to claim 8, wherein the biocompatible metal is used in the form of a metal hydride powder.

22. (Previously Presented) The method according to claim 8, wherein the surface micro-structure is produced by etching of the implant surface by means of a technique selected from the group consisting of acid (bath) etching, plasma etching, oxygen plasma etching, acid (bath) etching and plasma etching, and acid (bath) etching and oxygen plasma etching.

23. (Previously Presented) The method according to claim 8, wherein the surface micro-structure is created by application of fine biocompatible particles having a particle size in a range selected from the group consisting of the range from 0.01 μm to 5 μm inclusive, the range from 0.1 μm to 3 μm inclusive, and the range from 0.2 μm to 1 μm inclusive.

24. (Previously Presented) The method according to claim 8, wherein the surface micro-structure is created by application of fine biocompatible particles applied by a sol-gel method using a binder selected from the group consisting of a binder and a silicate-based binder.

25. (Previously Presented) The method according to claim 32, wherein the fine biocompatible particles comprise a material selected from the group consisting of titanium dioxide, calcium phosphate, and another biocompatible material.

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (Previously Presented) The method according to claim 8, wherein the porosity is in a range of between about 30% to 70% inclusive.

30. (Previously Presented) The method according to claim 29, wherein the porosity is in a range of between about 35% to 65% inclusive.

31. (Previously Presented) The method according to claim 8, wherein the surface micro-structure on the implant surface is produced by etching of the implant surface.

32. (Previously Presented) The method according to claim 8, wherein the surface micro-structure on the implant surface is produced by application of fine biocompatible particles to the implant surface.

33. (Previously Presented) A method of producing an open-pored coated implant, comprising:

applying at least one layer of a biocompatible metal or an alloy thereof, comprising particles having a particle size in a range of approximately 50 μm to 800 μm, to a virgin surface of the implant to produce an open-pored implant surface;

producing a surface micro-structure on the open-pored implant surface;

wherein the open-pored implant surface is produced by a vacuum plasma spraying method.

34. (Previously Presented) The method according to claim 33, wherein the vacuum plasma spraying method applies fine biocompatible particles and is adjusted so that the fine biocompatible particles are not completely compacted upon impact.

35. (Previously Presented) The method according to claim 33, wherein the vacuum plasma spraying method is adjusted so that an open-pored structure of the implant surface is generally maintained.

36. (Previously Presented) The method according to claim 33, wherein the surface microstructure comprises a biocompatible metal applied as particles having a particle size in a range selected from the group consisting of the range from 0.01 μm to 5 μm inclusive, the range from 0.1 μm and 3 μm inclusive, and the range from 0.2 μm to 1 μm inclusive.

37. (Canceled)

38. (Canceled)

39. (Canceled)

40. (Canceled)

41. (Canceled)

42. (Previously Presented) The surface layer of Claim 8, wherein pores of the open-pored structure have an average diameter of 300 μm.

43. (Previously Presented) The method of Claim 33, wherein the particles define pores having an average diameter of 300 μm.

44. (Canceled)

45. (Previously Presented) The method according to Claim 8, wherein the surface microstructure is produced in a controlled manner to preserve the open-pored structure to allow ingrowth of bone.

46. (Previously Presented) The method according to Claim 33, wherein the surface microstructure is produced in a controlled manner to preserve the open-pored structure to allow ingrowth of bone.